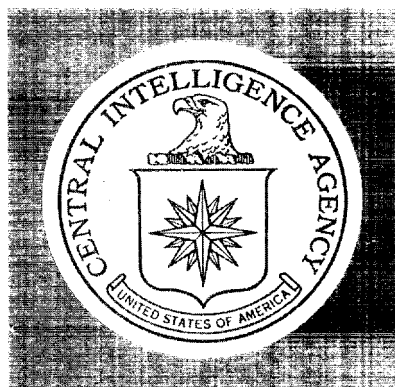


**Secret**



DIRECTORATE OF  
INTELLIGENCE

# Intelligence Memorandum

*Petroleum in North Vietnam at the Outset of 1968:  
A Review of Developments During 1967*

JCS review completed.

**Secret**

Copy No. 158

ER IM 68-27

March 1968

## WARNING

This document contains information affecting the national defense of the United States, within the meaning of Title 18, sections 793 and 794, of the US Code, as amended. Its transmission or revelation of its contents to or receipt by an unauthorized person is prohibited by law.

GROUP 1  
EXCLUDED FROM AUTOMATIC  
DOWNGRADING AND  
DECLASSIFICATION

**SECRET**

Foreword

This memorandum makes estimates of the supply of petroleum in North Vietnam during 1967. It up-



25X1

**SECRET**

SECRET

25X1

CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
March 1968

INTELLIGENCE MEMORANDUM

Petroleum in North Vietnam at the Outset of 1968:  
A Review of Developments During 1967

Summary

North Vietnam appears to have overcome the effects of the intensified bombing of petroleum storage facilities that occurred in the last half of 1966. During 1967, petroleum imports, consumption, stocks, and storage capacity all increased, and there was no evidence of shortages.

North Vietnam imported an estimated 256,000 tons\* of petroleum in 1967, a moderate increase over the previous peak level of 237,000 tons in 1966. About 90 percent of the imports were delivered by tanker, principally from the Soviet Far East, on a routine schedule. North Vietnam's sizable fleet of oil barges and other lighters makes it possible to discharge tankers while at anchor in Haiphong harbor without serious delays. North Vietnam is capable of handling petroleum imports at a considerably higher rate than the monthly average in 1967 of 21,000 tons. Imports were almost 37,000 tons in May 1967 and more than 34,000 tons in January 1968.

*\* Metric tons are used throughout this memorandum.*

*Note: This memorandum was produced by CIA. It was prepared by the Office of Economic Research.*

SECRET

25X1

SECRET

Despite the loss through airstrikes of about 1,400 tons of storage capacity at the principal storage terminal at Do Son and another 3,000 tons at dispersed storage sites in 1967, there was a net increase in storage capacity of about 30,000 tons during the year. No effort was made to restore any of the principal terminals that were damaged, suggesting that the North Vietnamese no longer consider these vital to petroleum distribution. Instead, they have continued to expand and modify their dispersed tank site system which is far less vulnerable to air attack. New sites (including some in the buffer zone near the Chinese border) were constructed, damaged sites were rehabilitated, and some tanks were relocated from old sites. Storage capacity also was increased by the addition of a sizable number of petroleum drums. North Vietnam now has storage capacity sufficient to maintain between 100 and 120 days of supply. There is, in addition, "floating" storage capacity represented by the oil barge fleet and the rail tank car and tank truck parks.

At the outset of 1968, North Vietnam probably had on hand about 65,000 tons of petroleum, equivalent to about 100 days of supply at the 1967 estimated rate of consumption and 13,000 tons more than a year earlier. The country also has ready access to an unknown, but probably considerable, quantity of petroleum in storage in China for North Vietnamese account. During December 1967 and January 1968 a total of 32,000 tons of petroleum was delivered to storage in China on North Vietnamese account. This may have been a precautionary move in the event of the closing of Haiphong, or may simply reflect anticipated increases in consumption. Petroleum consumption also increased by about 25 percent, to an average monthly rate of about 20,000 tons in 1967. This was the result of increased activity in truck transport, greater use of petroleum-driven electric power generators, and the higher level of logistic support to forces in Laos and South Vietnam.

SECRET

Petroleum Supply and Demand

1. North Vietnam imported about 256,000 tons of petroleum in 1967, an increase of 8 percent over the 237,000 tons estimated for 1966. Imports in 1967, all in the form of refined products, had a value of about \$10 million. Monthly imports, by carrier, in 1967 are shown in Table 1.

2. Consumption of petroleum in 1967 is estimated to have been about 20,000 tons per month, or 240,000 tons for the year. This estimate is based on the average monthly rate (slightly more than 20,000 tons) of petroleum imports over 25 months and takes into consideration the estimated number and use of petroleum-consuming equipment in North Vietnam during 1967. Consumption was about 25 percent greater than in 1966, reflecting the increased activity in truck transport caused by the interruptions in rail transport, the greater use of petroleum-driven electric power generators caused by the loss of fixed powerplants, and the higher level of support to forces in Laos and South Vietnam. The total demand for petroleum, however, was only slightly higher than in 1966, as the estimated loss of petroleum through bombing in 1967 was only about 3,000 tons, compared with at least 41,000 tons the year before.

3. There was no evidence of any serious shortage of petroleum in North Vietnam in 1967 or of failure on the part of the suppliers to make adequate and timely deliveries of petroleum. North Vietnam's ability to import sufficient amounts of petroleum on a routine basis suggests that problems caused by the destruction of many of its principal storage terminals since mid-1966 have been overcome. The estimated supply on hand at the beginning of 1968 was about 65,000 tons, equivalent to about 100 days of supply at the 1967 rate of consumption. The supply of petroleum on hand at the outset of 1967 probably was 52,000 tons, and the levels of supply in North Vietnam during the year probably were never less than about 75 days. It is thus apparent that the bombing of petroleum targets did not seriously weaken the economy of North Vietnam, did not produce

SECRET

shortages of petroleum, and did not diminish North Vietnam's capability to support military activities or the infiltration of men and supplies into the South. The petroleum supply and demand in North Vietnam in 1966 and 1967 is summarized in Table 2.

Petroleum Imports - Origin and Transport

4. As in earlier years, the USSR was the principal supplier of petroleum to North Vietnam in 1967. Rumania and Hungary again provided only token supplies. Although 56,000 tons of petroleum were observed coming from Communist China, it is not possible to identify the portion that was of Chinese origin and the portion that represented the trans-shipment of Soviet and Rumanian petroleum delivered to China for North Vietnam.

5. Motor gasoline (120,000 tons) and diesel fuel (110,000 tons) accounted for about 90 percent of the imports of petroleum and kerosine for five percent. Miscellaneous lubricants, specialty products, and aircraft fuels comprised the remainder.

25X1

SECRET

25X1



Storage

Principal Storage Terminals

9. At the beginning of 1966, there were nine principal storage terminals with a combined capacity of about 100,000 tons. By 1 January 1967, bombing had reduced the number of terminals to seven with a total capacity of less than 18,000 tons. With the



25X1



SECRET

loss of the principal terminal at Do Son during the year, six terminals with a total capacity of 16,000 tons remained on 1 January 1968. Of these six, only four are considered to be operational; two had only nominal capacity. The North Vietnamese have made no effort to restore any of the damaged terminals, suggesting that this type of storage no longer is considered essential. The principal storage terminals and their capacities as of 1 January 1966, 1967, and 1968 are listed in Table 4.

Dispersed Storage Sites - Tanks

10. The dispersed storage tank system, far less vulnerable than the principal storage terminals to airstrikes, is the keystone to North Vietnam's petroleum import and distribution procedures. This system was expanded and modified during 1967. At the outset of 1968, a total of 121 storage sites with an estimated total capacity of almost 40,000 tons had been identified and analyzed from photography. Included are 10 new sites in the buffer zone near the Chinese border, the first such sites identified in this area. A year earlier 89 sites with an estimated total capacity of 32,000 tons had been identified.

11. The dispersed tank sites, and the drum sites described below, were bombed during 1967. A complete assessment of damage is not possible, but the total storage capacity destroyed at dispersed tank and drum sites probably did not exceed 3,000 tons. There was evidence, moreover, that buried tanks at some of the sites struck were exhumed and not replaced, suggesting that the tanks may have been relocated. For example, the tanks at Can Thon (JCS Target 51.18) that survived the bombing in December 1966 were removed, and photography of late 1967 indicated that the site was being abandoned. Allowing for such relocation work, for damage inflicted by bombing, and for the probable existence of unidentified sites, the total capacity of dispersed tank sites probably was in the range of 40,000 to 50,000 tons as of 1 January 1968.

SECRET

SECRET

Dispersed Storage Sites - Drums

12. Petroleum containers (of various sizes but expressed in terms of 55-gallon-drum equivalents) represent an increasingly important means of storing and distributing petroleum in North Vietnam. On the basis of the tonnage of petroleum imported on dry cargo ships and of estimated losses from bombing and from normal use in 1967, North Vietnam probably had an inventory of 300,000 drums at the outset of 1968. This is equivalent to storage for about 50,000 tons and is a net increase of about 130,000 drums, or 22,000 tons, above the inventory of 1 January 1967.

Other Storage Sites

13. An estimated 5,000 tons of bulk storage is available at industrial and military installations for the exclusive use of the installations they serve. The capacity at these sites probably did not change during 1967. There is also an unknown but important amount of "floating" storage capacity represented by barges, rail tank cars, and tank trucks in North Vietnam.

Summary of Storage Capacity

14. Petroleum storage capacity as of the beginning of 1967 and 1968 is summarized as follows:

	<u>Thousand Metric Tons</u>	
	<u>1967</u>	<u>1968</u>
Principal storage terminals (tanks)	18	16
Dispersed storage sites (tanks)	30 to 40	40 to 50
Dispersed storage sites (drums)	28	50
Military and industrial sites (tanks)	5	5
Total	<u>81 to 91</u>	<u>111 to 121</u>

SECRET

SECRET

15. In the absence of definitive information, it is reasonable to consider bulk petroleum storage (tanks) to be about 75 percent full on the average and that about 50 percent of the drums would be filled and 50 percent would be empty at any given time. Storage potential used in this manner would accommodate about 70,000 to 80,000 tons of petroleum, equivalent to between 100 and 120 days of supply at the 1967 rate of consumption. Any petroleum in "floating" storage would represent an additional supply not included in this estimate.

SECRET

SECRET

Table 1

North Vietnam: Estimated Monthly Imports  
of Petroleum, by Carrier  
1967

Thousand Metric Tons				
<u>Month</u>	<u>Tanker</u>	<u>Cargo Vessel</u>	<u>Rail</u>	<u>Total</u>
January	26.2	2.1	1.0	29.3
February	20.4	3.4	0.8	24.6
March	24.0	3.5	0.8	28.3
April	11.9	3.9	0.8	16.6
May	33.7	2.0	1.0	36.7
June	10.9	0.1	0.8	11.8
July	10.6	4.1	0.8	15.5
August	20.7	1.9	0.8	23.4
September	4.0	1.5	0.8	6.3
October	12.1	0.4	0.8	13.3
November	19.1	1.6	0.8	21.5
December	26.9	1.2	0.8	28.9
Total	<u>220.5</u>	<u>25.7</u>	<u>10.0</u>	<u>256.2</u>

SECRET

**SECRET**

Table 2

North Vietnam: Petroleum Supply and Demand  
1966-67

	Thousand Metric Tons	
<u>Supply</u>	<u>1966</u>	<u>1967</u>
Stocks on hand, 1 January	46	52
Imports	237	256
Total supply	<u>283</u>	<u>308</u>
<u>Less Demand</u>		
Consumption	190	240
Losses	41	3
Total demand	<u>231</u>	<u>243</u>
Stocks on hand, 31 December	<u>52</u>	<u>65</u>

**SECRET**

SECRET

Table 3

North Vietnam: Estimated Seaborne Imports  
of Petroleum, by Origin and Type of Ship a/  
1967

<u>Origin</u>	<u>Thousand Metric Tons</u>			<u>Percent</u>
	<u>Tanker</u>	<u>Cargo</u>	<u>Total</u>	
USSR	<u>178.6</u>	<u>9.4</u>	<u>188.0</u>	<u>76.3</u>
Black Sea	26.6	8.3	34.9	14.2
Far East	152.0	1.1	153.1	62.1
Communist China	<u>42.0</u>	<u>14.2</u>	<u>56.2</u>	<u>22.8</u>
North China	28.0	14.2	42.2	17.1
South China	14.0	0	14.0	5.7
Rumania	<u>0</u>	<u>1.0</u>	<u>1.0</u>	<u>0.4</u>
Hungary	<u>0</u>	<u>1.2</u>	<u>1.2</u>	<u>0.5</u>
Total	<u>220.5</u>	<u>25.7</u>	<u>246.3</u>	<u>100.0</u>
<u>Percent</u>				
	90	10	100	

a. Because of rounding, totals may not agree with the sum of the components.

SECRET

Table 4

North Vietnam: Location and Estimated Capacities  
of Principal Petroleum Storage Terminals a/  
1 January 1966, 1967, and 1968

<u>JCS Target Number</u>	<u>Name</u>	<u>Coordinates</u>		<u>Metric Tons</u>		
		<u>North</u>	<u>East</u>	<u>1 January 1966</u>	<u>1 January 1967</u>	<u>1 January 1968</u>
48	Haiphong	20 52	106 39	40,620	430	430
49	Hanoi	21 03	105 53	30,620	0	0
50	Vinh	18 40	105 43	1,350	1,350	1,350
51	Nguyen Khe	21 10	105 51	7,500	5,000	5,000
51.1	Ha Gia	21 16	105 50	9,910	7,720	7,720
51.11	Bac Giang	21 16	106 11	2,260	1,560	1,520
51.13	Do Son	20 42	106 47	2,860	1,430	0
51.14	Viet Tri	21 17	105 26	1,400	40	20
51.17	Duong Nham	21 01	106 30	4,130	0	0
Total				<u>100,650</u>	<u>17,530</u>	<u>16,040</u>

a. Can Thon (JCS Target 51.13), because of the nature of its construction and location, was considered as a dispersed tank site and is excluded from this table. Can Thon suffered some damage from bombing at the end of 1966; by the end of 1967 the undamaged storage tanks (about 1,700 tons of capacity) had been removed and the site had been abandoned.

SECRET

- 12 -

SECRET

***SECRET***

***SECRET***